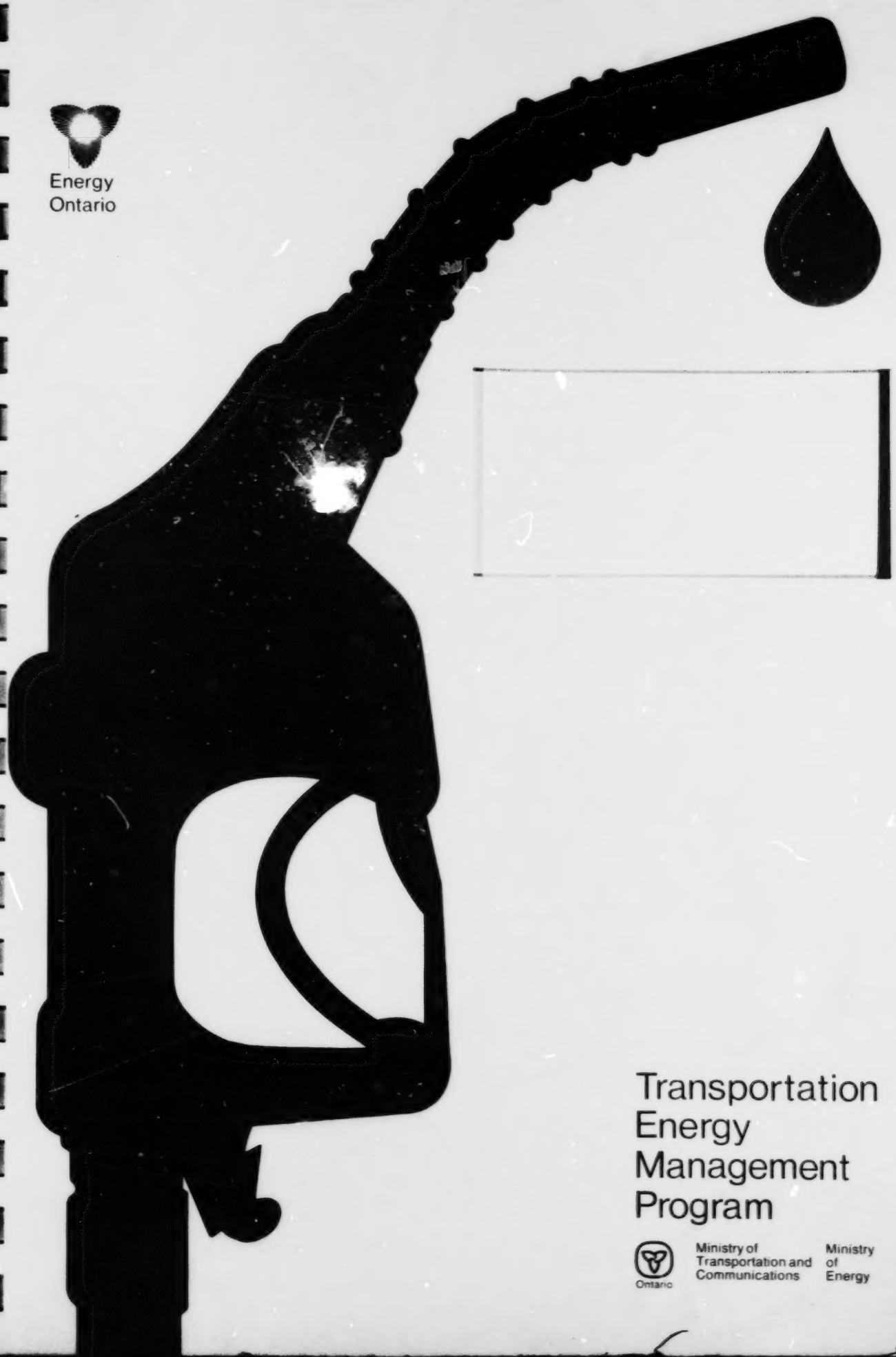
Energy
Ontario



Transportation Energy Management Program

Ontario

Ministry of Transportation and Communications

Ministry of Energy

TEMP
Year-end Report
Fiscal Year
1983/84

TEMP
Year-end Report
Fiscal Year 1983/84

The Transportation Energy Management Program (TEMP) is a joint program of the Ministry of Transportation and Communications (MTC) and the Ministry of Energy in which MTC is responsible for the program delivery of the utilization aspects of transportation energy.

This report was prepared by MTC's TEMP Office to record TEMP's accomplishments during the past fiscal year.

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EXECUTIVE SUMMARY

In the past year, TEMP's pursuit of energy conservation and oil substitution, in both the private and public sectors, has continued. The prevailing high price of gasoline has provided a catalyst for the success of TEMP activities. Twenty-five new projects were initiated, 32 projects were maintained and 25 were completed in the past year.

DRIVESAVE

DriveSave continued to market energy conservation to its three major target groups: light vehicle fleets, beginning drivers and general licensed drivers.

Fourteen DriveSave seminars for fleet managers were conducted. They were attended by 204 fleet managers, representing 160 companies with a total of over 60 000 vehicles.

Increased involvement with driver educators permitted a more extensive marketing approach towardds beginner drivers.

Over 2 million pamphlets have been distributed by mail and through the DriveSave display. The DriveSave, Trucksave and Drive Propane newsletters have been amalgamated into the FuelSaver newsletter since the target audiences have much in common.

TRUCKSAVE

During the past fiscal year, an estimated 40 million litres of fuel were saved by truck fleets using energy saving techniques promoted through the Trucksave program. In order to maintain the relevance and efficiency of Trucksave, a consultant firm was hired to assess the performance of this program.

A film, "The Trucksave Edge", dealing with energy driving techniques, was produced. It has been extremely well received by the trucking industry, and has been shown across Canada.

A slide presentation and an accompanying booklet on truck maintenance for fuel efficiency were also produced.

Participants in the Trucksave Economy Challenge, the annual fuel efficiency driving competition for truckers, increased by 50%.

MUNICIPAL

The Municipal program, with guidance from the Municipal Transportation Energy Advisory Committee (MTEAC), completed and distributed the Transportation Energy Analysis Manual (TEAM) to all Ontario Municipalities with a population over 5000. Distribution of Municipal Driver Training Program audio-visual material also continued.

The Metro Toronto Area Transportation Energy Study was completed and the Ottawa-Carleton Transportation Energy Management Study was brought to its final stage. These studies have identified energy conservation measures that can be implemented in Metro Toronto, Ottawa-Carleton and other Ontario municipalities.

SHARE-A-RIDE

Share-A-Ride continued to work to reduce travel demand by increasing vehicle occupancy during commuting trips. It is estimated that, as a direct result of Share-A-Ride activities, 14 million litres of gasoline are saved annually.

Partly due to Share-A-Ride promotion, the number of owner-operated vanpools increased last year to well over 300 vans, while employer-sponsored vanpools increased to 129. Share-A-Ride provides carpool matching services to about 15 000 people through 16 private and public sector employers. Considerable progress has been made towards the development of area-wide matching service capabilities.

GOVERNMENT PROGRAMS

Two new projects, Government Fleetsave and Internal Government Energy Contingency Planning for Transportation were initiated last year; the first to increase the efficiency with which government fleets are used, the second to ensure that plans are developed for maintaining essential government services during an energy shortfall.

The Fleetsave project received endorsement from the Deputy Ministers Council and the formation of a committee of Ministry fleet managers was initiated. A Government Energy Contingency Planning Advisory Committee was formed to assist ministries in the contingency planning activities.

TELECONFERENCING

Awareness of teleconferencing was increased through a variety of marketing activities. Over 500 brochures and reports were distributed to Ontario businesses and presentations were made to a wide range of organizations. An audio-visual teleconferencing training guide, "Training for Success", was produced and distributed. A comprehensive conference on teleconferencing, the first of its kind in Canada, was organized and conducted. It attracted over 250 participants from business, government, and health and educational institution.

ALTERNATIVE TRANSPORTATION FUELS MARKETING

ATF Marketing, through its Drive Propane activities, promotes the use of propane as vehicle fuel. During the past year, the propane vehicle population in Ontario increased to over 50 000, exceeding the government's 1985 target of 40 000 vehicles.

A second annual propane seminar, organized in co-operation with DriveSave and the Propane Gas Association of Canada, attracted representatives from over 150 companies.

Drive Propane staff was involved in the development of the MTC Propane-powered Vehicle Inspection Program.

ALTERNATIVE TRANSPORTATION FUELS

The ATF section of TEMP promotes the development and use of alternative transportation fuels through activities in research, demonstrations and technology development. Over the past year, research projects have started to concentrate on specific technological problems and demonstrations have been expanded to include most of the currently usable fuels. Private sector participation has been actively sought for all projects. The fuels that have been under consideration are propane, natural gas for vehicles (NGV), hydrogen and methanol.

Two NGV vehicle demonstrations, which were conducted with Consumers' Gas and Union Gas fleets, have been concluded. Fundamental research on improved NGV storage methods is proceeding at the Royal Military College in Kingston. A program of testing NGV conversion kits was completed at the University of Toronto Engine Laboratory.

A similar test program of propane conversion kits was also completed at the U of T engine Laboratory. A comprehensive report ont he results of these tests was issued.

An extensive demonstration of a methanol/gasoline blend, used in 40 MTC fleet vehicles, was conducted in co-operation with Sunoco and Alberta Gas Chemicals Ltd. This demonstration, which already has produced some valuable results, is being continued into the next fiscal year.

Two neat methanol vehicle tests were initiated, one in co-operation with Ford and Shell, the other, using three MTC vehicles, in co-operation with Celanese. Fundamental research on the cold starting properties of methanol fuels was initiated at the Royal Military College.

A hydrogen engine test cell with hydrogen fuel storage and handling system was installed at the Engine Laboratory at the University of Toronto. Investigation of hydrogen combustion characteristics in internal combustion engines was initiated at that facility. Similar investigations of hydrogen/carbon monoxide mixtures were discontinued, owing to discouraging results in combustion efficiency.

A report on the state-of-the-art technologies of methanol use in diesel engines was produced. Work on the development of a large propane-powered diesel engine was initiated at the Ontario Research Foundation. An extensive demonstration of propane-powered transit buses was started in co-operation with OC Transpo in Ottawa.

In order to provide information on the properties and uses of alternative transportation fuels, manuscripts were produced for booklets describing the various alternative fuels that may come into use.

DATA ANALYSIS AND PROGRAM PLANNING

In the past year, the second Transportation Energy Data Report was completed and data for the final edition was complied. An energy survey was undertaken to assess Ontario driver's reactions toward fuel conservation and toward TEMP's activities. A report detailing TEMP's positions and prospects was compiled and a Long Range Plan was developed.

FOREWORD

Ontario obtains about three-quarters of its energy supplies from outside the province, primarily from other parts of Canada. Therefore, the province becomes vulnerable to energy price and supply changes that originate beyond its boundaries.

Today, crude oil meets 33% of Ontario's primary energy needs, a reduction from a year ago when crude oil represented 35% of Ontario's primary energy needs. Transportation accounts for approximately 54% of the oil consumed in Ontario. Moreover, the transportation sector is unique because it is almost totally (98%) dependent on oil products as its energy source. Thus, an interruption of any oil supply becomes crucial to the transportation sector.

The consumption of oil products by the transportation sector has had a significant impact on the provincial economy. In Ontario, the transportation sector accounts for 3.5 billion dollars per year of the province's total annual oil costs of 6.4 billion dollars. Because of Ontario's increasing dependence on oil and the importance of oil in the transportation sector, the Transportation Energy Management Program (TEMP) was established in 1977.

TEMP is a joint program involving the Ministry of Transportation and Communications (MTC) and the Ministry of Energy (M'ENY). The program aims to co-ordinate and, where necessary, to initiate action which will reduce Ontario's oil consumption. By improving oil-use efficiency, reducing travel requirements, and introducing alternative transportation fuels, TEMP serves as a catalyst in the reduction of Ontario's oil consumption. The scope of the program extends to all modes of publicly- and privately-owned transportation in Ontario. The primary focus of TEMP concentrates on the five million cars, trucks and buses operated by Ontario's private sector. The program is co-ordinated with industry via a series of steering committees which have been created from within TEMP and which meet regularly. MTC administers TEMP with the aid of 25-30 in-house staff in consultation with M'ENY. TEMP consists of several

modules designed to help with the attainment of a specific provincial transportation energy target. The four transportation energy targets established by Ontario that TEMP plans to achieve are:

- a 33% reduction in the fuel consumed per passenger-kilometre in passenger transportation by 1995 over 1980;
- a 20% reduction in the fuel consumed per tonne-kilometre in freight transportation by 1995 over 1980;
- a 10% improvement in energy efficiency in the Ontario government fleet operations by 1983 over 1980; and
- a 2% substitution of petroleum products by alternative fuels by 1985 and 10% by 1995.

1/ DRIVESAVE: CONSERVATION MARKETING

1.1/ Overview

DriveSave was very active and successful in the fiscal year 83/84, in part, due to its continued development of new activities and distribution methods to reach Ontario's drivers. Initiatives included improving liaison with driver educators and public facilities (e.g., libraries) as part of the total range of marketing efforts directed towards DriveSave's three major target groups (light vehicle fleets, beginner drivers and general licensed drivers).

1.2/ Light Vehicle Fleets

The monthly meetings of the DriveSave Fleet Advisory Committee continued. The committee's membership includes representation from:

- a number of large and medium-sized private sector fleets;
- a major leasing firm;
- a major oil company;
- the City of Thunder Bay; and
- the Propane Gas Association of Canada.

In addition to providing a forum for exchange of information with DriveSave, the committee involved itself in:

- sponsorship of the second propane seminar, "Propane Today," which had displays by major automotive propane companies directed at the representatives of over 150 fleets;

- presentations by various committee members detailing the successful fuel economy programs in their respective firms; and

- examination of computerized records management systems presented by the computer industry.

Also continuing in FY 83/84 were the DriveSave seminars for fleet managers. Attendees at the seminars included representatives of more than 160 companies and over 200 fleet managers. Extensive marketing

efforts have increased seminar attendance. Included were representatives of the following companies: United Parcel Service, Inco Ltd., Hostess Food Products Ltd., Algoma Central Railway, Victorian Order of Nurses, Labbatt Breweries, Allstate Insurance, Kodak Canada Ltd., Tupperware, and the Canadian Forces Bases of Toronto, Kingston, Ottawa, London and Belleville.

1.3/ Beginner Drivers

Actions taken to reach Ontario's new drivers included making extensive contacts and marketing efforts with driving instructors in high schools and in private driving schools. In addition, public libraries with A/V departments were contacted and supplied with various DriveSave materials for easier access by the general public and beginner drivers. These contacts were used to survey and assess the use of fuel economy information gained by the driving instructors who attended one of the ten special seminars held in the preceding year. Also the use of DriveSave materials, particularly "The DriveSave Zone" film and the reaction of students DriveSave materials, was determined through the telephone survey.

1.4/ General Licensed Drivers

Fall/Winter and Spring/Summer versions of the seasonal pamphlet containing fuel economy tips were again developed and distributed to over two million Ontario drivers via the driver's licence renewal mailings sent annually by MTC.

A new DriveSave and Propane display was developed for use in various public locations such as shopping malls and government buildings. The display contains a series of illustrations accompanied by fuel economy messages. Also, the display has large racks for printed information materials and an A/V unit in the display shows a three minute film of Ebenezer Scrooge fuel economy tips taken from "The DriveSave Zone".

Pamphlets were distributed through LCBO outlets, Brewer's Retail outlets and public libraries. Presentations on fuel economy were made to a wide variety of community clubs and associations.

1.5/ Project Reports

1.5.1/ Improving the Fuel Economy of Auto Fleets (33189)

Project Objective

To train fleet managers and drivers to operate and maintain their vehicles to achieve maximum fuel economy.

Specific Activities

- Implementation of the DriveSave Auto Fleet program, the goal of which is to train 200 fleet managers and 7000 drivers in FY 83/84.

- Maintenance and development of the Fleet Advisory Committee as an active industry-government group that defines, guides and responds to the development of programs for fleets.

Progress

Goals were not only achieved, but were surpassed; 204 fleet managers representing 160 companies and more than 60 000 vehicles, attended seminars in Ontario. The Fleet Advisory Committee continued to provide support and feedback to various DriveSave initiatives via the committee's monthly meetings.

Starting Date: December 1980 **Completion Date:** Ongoing

1.5.2/ Beginner Driver Education (33195)

Project Objective

To provide information on and to promote the use of driving and maintenance techniques to achieve fuel efficiency for beginner drivers.

Progress

Copies of "The DriveSave Zone" film, with related pamphlets and other DriveSave material, have been supplied to every Board of Education in Ontario. Also, private driving schools and various community groups have purchased or borrowed copies of the film from various film libraries throughout Ontario.

A follow-up study to evaluate the use of and response of driving students to The "DriveSave Zone" film and various DriveSave literature was conducted at high schools and private driving schools. The response, to date, has been overwhelmingly positive.

Starting Date: April 1981 **Completion Date:** Ongoing

1.5.3/ Newsletters -- DriveSave/FuelSaver (33206)

Project Objective

To develop a quarterly newsletter which will inform driver educators, fleet managers and media about fuel economy and DriveSave programs.

Progress

The final edition of the DriveSave newsletter, produced in May 1983, was replaced by the new FuelSaver newsletter. This new publication combines the three, previously separate newsletters of the DriveSave, Trucksave and Drive Propane programs. The two FuelSaver issues produced in FY 83/84 incorporated a trimmer production process and the newsletter's distribution list was streamlined.

Starting Date: March 1982 **Completion Date:** Ongoing

1.5.4/ Fuel Economy for General Licensed Drivers (33207)

Project Objective

To provide fuel economy information to Ontario's drivers through a variety of communication forms.

Specific Activities

- mailing of approximately two million seasonal (Fall/Winter, Spring/Summer) fuel economy pamphlets via driver's licence renewal mailings;
- development of a new DriveSave display for use in public locations, primarily, shopping malls; and
- continuation of special presentations on fuel economy to various community groups.

Progress

The seasonal pamphlets were produced in a bilingual form and distributed through LCBO outlets, Brewer's Retail outlets, public libraries and driver's licence renewal mailings. The DriveSave/Drive Propane display was erected in more than 15 shopping malls and in other various public locations. Special presentations on fuel economy were made to more than 20 community groups by DriveSave staff.

Starting Date: March 1982 **Completion Date:** Ongoing

2/ TRUCKSAVE: CONSERVATION MARKETING

2.1/ Overview

Numerous Ontario fleets are using Trucksave material to assist in the reduction of their fuel costs. It is estimated that in FY 83/84, some 40 000 000 L of fuel were saved as a result of fleets now being aware of the various energy saving techniques that may be utilized.

To ensure that energy conservation material is acceptable and marketing and distribution methods are satisfactory, a consulting firm has been engaged to carry out a Market Assessment on the Trucksave Program. The results of the study are expected by mid-1984.

The series of Spec'ing booklets, an A/V program on Maintenance for Fuel Efficiency, and many articles in trade magazines and papers have made the trucking industry more aware of the Trucksave program.

The 1983 Fuel Economy Challenge was run with almost double the entries of 1982. Industry donated over $10 000 in prize money for the event.

Trucksave's greatest impact on the industry this year was the production of a new film, "The Trucksave Edge", which was made available at the end of the fiscal year. The film, made with the assistance of the trucking industry and the Fleet Advisory Committee, was tested before 2000 people prior to release. It is being well received and has been shown from coast to coast.

The continued support of the trucking industry has enabled Trucksave to make a significant contribution to the reduction of fuel used in the province.

2.2/ Project Reports

2.2.1/ Trucksave Fleet Advisory Committee

Project Objective

To generate fuel saving ideas, critique drafts, arrange tests and disseminate Trucksave information.

Progress

The trucking industry's acceptance of Trucksave's achievements has been enhanced by the knowledge that the Fleet Advisory Committee members participate in all aspects of the program to ensure the validity of all publications and audio/visual material. The membership has been increased to include additional areas of the industry. (See Appendix for list of members).

Starting Date: August 1979 **Completion Date:** Ongoing

2.2.2/ Small Fleet and Owner Operating Initiatives (33140)

Project Objective

To provide and distribute Trucksave material to small, and single vehicle fleets in order to reduce fuel consumption in the province.

Progress

A new film, "The FuelSave Edge", was produced and was extremely well received across Canada. All Trucksave publications required reprinting and a new design of placemats for truckstops was distributed. Thirty-two truckstops have racks for FuelSave publications and are visited on a regular basis.

Starting Date: April 1982 **Completion Date:** March 1984

2.2.3/ Fuel Efficient Truck Maintenance (33200)

Project Objective

To provide the segment of the industry which has a variety of truck sizes in its fleets with a training program to save 10% of its fuel by using improved maintenance and operating practices.

Progress

A 20-minute slide presentation was produced on "Maintenance for Fuel Efficiency" together with a 20-page booklet for use by mechanics and supervisors. A 75-page report was issued on maintaining vehicle fuel efficiency. These items have been requested by many companies across Canada.

Starting Date: January 1981 **Completion Date:** March 1984

2.2.4/ Fuel Efficient Spec'ing Manuals (33202)

Project Objective

To create awareness in the industry of the cost-effective fuel efficient options that may be specified on a new truck or fitted to a used truck.

Progress

Booklets #7 and #8 were produced and distributed to over 2500 companies, with the result that many companies requested more copies, together with copies of booklets #1 to #4. Many copies have been distributed at trade shows and seminars. Booklets #5 and #6 will be distributed by June 1984.

Starting Date: January 1981 **Completion Date:** December 1985

2.2.5/ 1983 Fuel Economy Challenge (33299)

Project Objective

To promote the use of accurate fuel economy measurement and to publicize the results of over-the-road fuel economy tests.

Progress

This was the 2nd year of the Challenge and many companies entered their drivers in the very successful event. Over $10 000 in prize money was donated by industry. Prizes were presented at Canada's Wonderland. The results have had wide publicity and one large engine manufacturer has used the results in North American advertising. This event gives Trucksave a high profile at truckstops and driver meetings.

Starting Date: June 1983 **Completion Date:** October 1983

2.2.6/ Truck Marketing Assessment (33371)

Project Objective

To assess the current effectiveness of Trucksave and provide future direction to the Trucksave program.

Progress

After consultation with various Ontario companies and the Advisory Committee, a series of questions have been generated. These questions will be put to some 100 companies and the results assessed.

Starting Date: February 1984 **Completion Date:** June 1984

3/ MUNICIPAL: CONSERVATION MARKETING

3.1/ Overview

One of the major achievements of the past fiscal year was the completion and distribution of both the Transportation Energy Analysis Manual (TEAM) and the Municipal Driver Training Program. In completing the Metropolitan Toronto Area Transportation Energy Study and the Ottawa-Carleton Transportation Energy Study, a number of high energy conserving measures were recognized as potential candidates for implementation in other municipalities.

The activities of the Municipal Transportation Energy Advisory Committee (MTEAC) have progressed favourably as emphasis has shifted from studies to actual implementation of a feasible solution to the transportation energy problem.

3.2/ Project Reports

3.2.1/ Metro Toronto Area Transportation Energy Study: Phase II (33174)

Project Objectives

- to develop energy efficient zones based on land-use/transportation relationships;
- to develop an implementation plan for energy shortfalls;
- to develop an implementation plan for short-term energy conservation; and
- to measure energy resources to implement and monitor short-term energy conservation plan.

Progress

The study, now completed, consists of seven chapters. Chapter 2 outlines the transportation data base in terms of the amount of energy consumed annually in the transportation sector in Metro. Chapter 3 outlines the preliminary assessment of energy conservation measures previously undertaken. Chapter 4 features a detailed analysis of measures deemed suitable for implementation in 1983/84 and a more general analysis of measures deemed suitable for implementation in 1984-87.

Chapters 6 and 7 contain the conclusions reached in the report.

Starting Date: March 1982 **Completion Date:** March 1984

3.2.2/ Municipal Transportation Energy Advisory Committee (33177)

Project Objective

To provide technical assistance and co-ordination to all Ontario municipalities to enable them to develop or improve transportation energy management programs. This will allow the municipalities to take maximum advantage of all conservation opportunities in the transportation sector.

Progress

The committee met five times during this fiscal year and dealt with the following issues:

finalization and distribution of the Transportation Energy Analysis Manual;

the guiding and reviewing of various stages of the Metropolitan Toronto Area Transportation Energy Study and the Ottawa-Carleton Transportation Energy Study; and

the provision of input into the content and distribution of

- MTEAC Newsletters
- Municipal Driver Training Program
- Sudbury's Fleet Management Information System.

Starting Date: February 1980 **Completion Date:** Ongoing

3.2.3/ Transportation Energy Analysis Manual Distribution (33225)

Project Objective

To guide municipal decision-makers and transportation professionals to those actions which can effectively reduce energy consumption within their municipality.

Progress

Over 400 manuals have been distributed to all municipalities in Ontario with a population of over 5000 as well as to over 50 Energy Auditors. The manuals are also available to other agencies on request.

The manual deals with all aspects of transportation-related energy consumption. It is intended to be a comprehensive reference that describes energy conservation, opportunities and measures. The chapters cover the following subjects:

1/ Overview and Summary
2/ Street System Operation
3/ Transit Service
4/ Ride-Sharing
5/ Travel-Demand Management
6/ Municipal Fleet Management
7/ Road Construction and Maintenance
8/ Contingency Planning
9/ Municipal Energy Program Management
10/ Energy Analysis Methods.

Starting Date: August 1980 **Completion Date:** March 1983

3.2.4/ Fleet Management Information System (33319)

Project Objective

To develop and implement a microcomputer-based on-line fleet management system to serve as a common tool in the operation of the Sudbury fleet. The design should be modular and transportable to other municipalities.

Progress

Due to unforeseen delays, only the first phase was completed. This includes a system review and a general design of the required system. In reviewing the system, familiarization with the City of Sudbury fleet was undertaken and the inventory and availability of suitable systems which have been previously developed was evaluated.

The general design included preparing the final specifications.

The second and third phase, to be completed during the next fiscal year, will consist of the development and implementation of the system.

Starting Date: July 1982 **Completion Date:** April 1983

3.2.5/ MTEAC Newsletter (33339)

Project Objective

To develop a quarterly newsletter which will inform Ontario municipalities about conservation programs and which will provide a pool of information from Ontario sources whose ideas on transportation should be shared.

Progress

Three issues of the newsletter were published during the current fiscal year and about 4500 copies of each issue were mailed out. Recipients included over 800 municipalities plus various elected officials, transit agencies, municipal clerks, transportation planners, libraries and institutions of learning.

Starting Date: January 1981 **Completion Date:** Ongoing

3.2.6/ Marketing the Municipal Driver Training Program (33340)

Project Objective

To present ideas to municipal drivers on how they can become more effective and efficient in their use of vehicles to reduce the amount of fuel consumed.

Progress

The program consists of the following:

the instructor/operator manual;
the 25-minute A/V program (available as a single projector slide show or a 16 mm film); and
a brochure which summarizes the program.

This package is available to all municipalities through MTC District and Regional offices and may also be requested from the TEMP office.

Starting Date: October 1983 **Completion Date:** February 1984

3.2.7/ Ottawa-Carleton Transportation Energy Management Study (33341)

Project Objectives

To develop an implementation and monitoring program for transportation energy conservation measures within the next five year period;
to develop an appropriate transportation energy analysis data base for use in the monitoring of transportation projects; and
to develop a transportation-energy contingency implementation plan for use in the Ottawa-Carleton area to neutralize a sudden energy shortage.

Progress

This study is close to completion with the final printing of the reports to be completed by June 1984.

The study identifies a number of short-term conservation measures that could be implemented in the near future.

The study develops a data base for estimating the energy impact of various transportation programs. The evaluation technique consists of incorporating energy into the evaluation to rank the various transportation programs.

Starting Date: July 1983 **Completion Date:** April 1984

3.2.8/ Transportation Energy Factors in Land Use Planning (33342)

Project Objective

To reduce transportation energy consumption by providing information for use in the development and review of official and secondary plans.

Progress

After initial project definition, the project was deferred due to reallocation of funds.

Starting Date: Deferred **Completion Date:** Deferred

4/ SHARE-A-RIDE: CONSERVATION MARKETING

4.1/ Overview

Last year Share-A-Ride worked successfully toward the objective of reducing travel demand by increasing vehicle occupancy during commuting trips. Share-A-Ride activities have been directly responsible for an estimated savings of 14 million litres of gasoline annually and removal of 4700 cars from rush hour traffic. Share-A-Ride activities have generated savings for employers and individuals.

Promotion and assistance to employer-based ridesharing programs (car-pooling and vanpooling) continued to be a main thrust of the subprogram. The scope of activities also includes owner-operated vanpooling, carpool parking lots, public awareness of ridesharing concepts and the initiation of projects to enhance Share-A-Ride's computerized ridesharing matching capabilities.

Most of the growth in vanpooling has shifted from employer-sponsored to owner-operated vanpools. The number of owner-operated vanpools increased dramatically last year to approximately 300-500 vans. The increase is partly due to Share-A-Ride's promotional campaign and the increasing confidence of individuals in the viability of the concept. Though it remains difficult to persuade employers to implement vanpool programs, there was an 8% increase in the number of employer-sponsored vanpools bringing the total to 129 vans.

Share-A-Ride continues to provide ongoing carpool matching services to 16 private and public sector employers who employ a total of 15 000 people.

Considerable effort was directed into development activities. Postal codes in Hamilton, Niagara Region, Kitchener and Ottawa were converted to a universal co-ordinate system, thus, enlarging the areas where computer-ized gridding of home locations can be accomplished. One of the most important new initiatives was to start work on a project to develop an area-wide ridesharing matching capability on a microcomputer.

The following includes some of the employers who are involved in Share-A-Ride activities:

American Express
Bell Canada
Chrysler Canada
Consumers' Gas
DOFASCO
Falconbridge
Ford
Garrett Manufacturing
General Foods
General Instrument
INCO Metals
Mutual Life
Niagara Region
Northern Telecom
OHIP
Oxford Regional Centre
Revenue
Rideau Regional Centre
3M Canada
Union Carbide
Westinghouse
Xerox

4.2/ Project Reports

4.2.1/ Marketing of Employer-Sponsored Ridesharing (33118)

Project Objective

To reduce the number of low occupancy private vehicles for commuting by substituting the vehicles with carpools and vanpools.

Specific Activities

The main thrust of this project is to promote the implementation of employer-based carpooling and vanpooling programs and to provide technical assistance and a free computer service to interested employers. Other areas of this project's activities include:

promoting carpool parking lots;
public awareness activities;
disseminating information to the media and MPP's;
assisting individuals interested in setting up a privately operated vanpool;
participating in the Canadian Association of Van Pool Operators; and
taking a leadership role in Canadian program development and providing information about ridesharing.

Progress

Promotion to Employers -- Eighty additional employers received detailed promotional material for a total of 600 since 1978. Many of these requests came from a newspaper advertisement oriented towards employers. Ten employers received introductory presentations bringing the total to 200 since 1978. A total of 1000 major Ontario employers received the Share-A-Ride quarterly newsletter.

Assistance to Employers -- Share-A-Ride assisted five companies in conducting feasibility studies for implementing ridesharing programs. Share-A-Ride gave ongoing support to vanpool program administrators and updated carpool matching systems.

Publications -- A brochure indicating the locations of carpool parking lots in Eastern Ontario was developed and a similar brochure for Central Ontario was updated. Detailed inventories of employer-sponsored vanpool programs and carpool parking lots were prepared and distributed. Employer information packages, a vanpool implementation handbook for the private operator and other publicity material were widely distributed.

Public Awareness -- Share-A-Ride participated in two regional shows, five subregional shows, the CNE, and in several exhibits as a component of TEMP. Approximately 5000 carpool and vanpool brochures were distributed at these shows. Seventy individuals, upon request, received a copy of the vanpool handbook for the private operator. An equal number of individuals called for information on vanpooling and were directed to the Ontario Van Pool Organization.

Computer Program -- Revisions were made to the carpool matching program.

Other Activities -- Share-A-Ride staff actively participate in the Canadian Association of Van Pool Operators. As Share-A-Ride is regarded as taking a leadership role in ridesharing program development, many government agencies draw on Share-A-Ride experience and expertise for ridesharing information.

Vanpooling -- Nine additional employer-sponsored vanpools were formed bringing the total to 129 vanpools in a total of 15 companies.

Direct Savings: - gasoline, 2.6 million litres annually
- roadspace, 950 cars removed.

It is unknown how many privately-operated vanpools were formed last year. It is estimated that there are 300-500 vanpools of this type operating in Ontario. Share-A-Ride has assisted in the formation of many of these.

Direct Savings (based on 300 vanpools):
- gasoline, 6 million litres annually
- roadspace, 2100 cars removed.

Carpooling -- One additional employer offered carpool matching to bring the total number of ongoing programs to 10. Eleven others have offered one-time matching services. A total of 6000 employees have access to ongoing carpool matching services. The total number of employees registered in those programs is 1000.

Direct Savings: - gasoline, 0.3 million litres annually
- roadspace, 175 cars removed.

Parking Lots -- During the last year, four new carpool parking lots were opened by MTC bringing the total to 34. These lots provide a total of 1725 spaces. Monitoring of the lots indicates overall occupancy at 62%.

Direct Savings: - gasoline, 3.9 million litres annually
- roadspace, 1000 cars removed.

Starting Date: April 1979 **Completion Date:** Ongoing

4.2.2/ Government Employee Carpooling (33298)

Project Objective

To provide an ongoing carpool matching service to employees working at large government locations to influence them away from low occupancy private vehicle commuting.

Specific Activities

Besides the resultant energy and roadspace savings, the carpool matching service provides a benefit to employees and the employer. For example, the Ministry of Revenue utilized the service to ease the transportation problems associated with relocating to Oshawa from downtown Toronto. Parking demand has been reduced at several sites as well.

Progress

Ongoing carpool matching services and annual updates were provided to the government locations involved. In total, 9000 government employees have access to carpool matching. Registration in the service totalled 1900.

Direct Savings: - gasoline, 0.5 million litres annually
- roadspace, 350 cars removed.

Starting Date: April 1982 **Completion Date:** Ongoing

4.2.3/ Share-A-Ride Newsletter (33338)

Project Objective

To promote and provide information on the concept, benefits and implementation of ridesharing to large employers, municipalities and the media through a newsletter distributed quarterly.

Progress

Four newsletters were produced last year. The content of the newsletter highlights Share-A-Ride and TEMP activities, specific employer-sponsored programs, issues and concerns in ridesharing and the promotion of the Canadian Association of Van Pool Operators.

The mailing list includes addresses of company executives, company contacts, municipalities, media, MPP's, ridesharing co-ordinators and individuals. The newsletter circulation is approximately 2500 copies. The newsletter has been well received. In addition to providing information about ridesharing and generating contacts, the newsletter has been instrumental in making Share-A-Ride the focus of ridesharing activities within the province.

Starting Date: April 1983 **Completion Date:** Ongoing

4.2.4/ Development of an Area-wide Matching Program on a Microcomputer (33387)

Project Objective

To develop an operating area-wide computer matching software package for use on a microcomputer.

Specific Activities

An area-wide computer matching program is capable of incorporating into one file people interested in ridesharing regardless of where they work or live. These matching services are of particular value during times of reduced energy supply because they are capable of handling rapidly expanding demand for matching at a relatively low cost. Microcomputers offer a dedicated system, transferability and can be acquired at low cost. These factors make a microcomputer most appropriate for application by municipalities offering area-wide services. Also, computing costs for carpool matching will be reduced by moving from the mainframe to a microcomputer.

Progress

A feasibility study was completed to determine hardware requirements and specifications. A consultant has been retained to do the programming and the hardware (an IBM PC) has been acquired.

Starting Date: October 1983 **Completion Date:** March 1984

5/ GOVERNMENT PROGRAMS

5.1/ Overview

Under the Government Programs module, two projects were initiated during the fiscal year: Government Fleetsave and Internal Government Energy Contingency Planning for Transportation.

The Province of Ontario operates approximately 10 000 motor vehicles to carry out the many diverse services that the government provides. The fuel bill for the fleet is a major cost item for ministries. Thus, the intent of the Fleetsave project is to reduce this cost and save energy by ensuring that good fleet conservation measures are implemented and practiced.

The intent of the Internal Government Energy Contingency Planning for Transportation project is to have plans prepared in advance for each ministry to ensure that the most essential government services can be maintained in the event of a temporary energy shortage.

5.2/ Project Reports

5.2.1/ Internal Government Energy Contingency Planning: Transportation (33343)

Project Objective

To develop a transportation energy contingency plan for each ministry that will ensure essential government services can be maintained during an energy shortfall and to set an example for the public and private sector.

Progress

An advisory committee chaired by MTC and having members from MTC, MGS, MNR, MOH, OPP and MCS was established to assist in determining data requirements and plan content for each ministry's transportation plan. The committee meets regularly and has produced Terms of Reference and a work plan. Currently, MTC is developing a typical contingency plan to guide ministries in the preparation of their individual plans.

Starting Date: June 1983 **Completion Date:** March 1985

5.2.2/ Government Fleetsave (33147)

Project Objective

To save fuel and money in the operation of the Ontario government fleet, and to exhibit leadership by example in transportation energy conservation.

Progress

Approval and endorsement of the Government Fleetsave project was received from the deputy ministers following a presentation to the Deputy Ministers Council on February 24, 1984. A committee of ministry fleet managers is currently being formed to review achievements and to establish potential goals and actions.

Starting Date: April 1984 **Completion Date:** March 1986

6/ TELECONFERENCING: CONSERVATION MARKETING

6.1/ Overview

Awareness of teleconferencing has been increased through a continuing program of presentations to large companies and through the distribution of over 5000 brochures and reports to Ontario businesses. An audio-visual program, "Training for Success", was developed and produced by the end of the fiscal year.

A highlight of the year's activities was organizing and conducting Canada's first comprehensive conference on teleconferencing, which attracted over 250 participants from business, government, and health and educational institutions.

6.2/ Project Reports

6.2.1/ Private Sector Teleconferencing Publicity Program (33304)

Project Objective
To encourage private sector companies to review the feasibility of teleconferencing.

Progress
Awareness of teleconferencing was increased in many ways. Over 5000 brochures and reports were distributed to Ontario businesses. Presentations were made to a wide range of organizations, including the Canadian Aeronautics and Space Association, the Ontario Hotel Association, Maritime Telephone and Telegraph, the Canadian Industrial Communication Assembly, General Motors, Council of Ministers of Education, and Shoppers Drug Mart. Members of the Teleconferencing Task Force were invited to speak at several conferences and seminars including IEEE on Vehicles Technology, IDATE International Conference on Picture Networks, Dimensions 83, University of Wisconsin Conference on Teleconferencing and Interactive Media, and Telecommunications '84. Papers and articles written by task force members were published internationally and distributed on request. The papers and articles included "Teleconferencing and Travel Substitution" (IEEE Proceedings), "Teleconferencing in Ontario"

(IDATE), "Video Conferencing in Ontario" (IDATE), "Teleconferencing and Ontario Government" (ITS), "Implementing Teleconferencing: Human and Organizational Factors" (ITS), "Teleconferencing in Ontario: Survey Results to Date" (ITS), and "Teleconferencing" (OEM). As a direct result of these activities, the Ontario government has become the recognized leader in teleconferencing. We frequently act as a consultant, giving advice on specific problems and assessing future trends. TEMP was prominently featured in a recent edition of Bell Canada's magazine and in various industry newsletters.

Starting Date: October 1980 **Completion Date:** March 1985

6.2.2/ Ontario Government Training (33305)

Project Objective

To establish teleconferencing demonstrations in Ontario ministries and to increase the use of teleconferencing in existing programs.

Progress

Teleconferencing in the Ontario government increased throughout the year. Approximately 100 teleconferences are held each month. Half of these conferences used the bridge that TEMP assisted in developing.

Over 2000 user manuals were distributed across the government. Training sessions were held for the Ministries of Health, the Attorney-General, Natural Resources, Revenue and the Multi-Cultural Advisory Committee. More than 300 people attended. An article published in "Topical" was reprinted and widely distributed.

A survey conducted with more than 200 users at the Ministry of Environment revealed a high level of satisfaction with teleconferencing. Currently, most ministries use some form of teleconferencing, but the level of use can be increased substantially.

Starting Date: February 1980 **Completion Date:** March 1984

6.2.3/ Equipment Demonstration Testing (33306)

Project Objective

To assist Ontario suppliers in developing teleconferencing equipment and services to ensure the success of teleconferencing and to promote industrial growth.

Progress

Interest in participating in teleconferencing demonstration projects emerged late in the year. Discussions were held with several companies including General Motors, Dominion Securities and the University of Western Ontario, but no additional formal agreements were signed in FY 83/84.

Informal assistance was provided to a number of supply companies including ESE Ltd., Bell Canada, Telecom Canada, and Darome Canada. Also, in the past year, a wide range of audio terminals was tested.

Starting Date: April 1982 **Completion Date:** March 1984

6.2.4/ Substitution/Complementarity Workplan (33329)

Project Objective

To identify and evaluate transportation/communication substitutes and complementary initiatives.

Progress

MTC's report on "Initiatives for Complementing or Substituting Travel" was published. A paper on substitution/complementarity prepared for IEEE was widely distributed and reviewed in the "TeleSpan" newsletter.

A day-long brainstorming session held by the experts in the field identified key issues and possible initiatives in telework.

Starting Date: April 1983 **Completion Date:** March 1985

6.2.5/ Conference on Teleconferencing (33369)

Project Objective

To supply information on teleconferencing.

Progress

More than 250 people from government, business, and health and education institutions attended Canada's first comprehensive conference for teleconferencing. Displays were set up by 13 vendors. Over 30 users, suppliers and consultants spoke on various aspects of teleconferencing during the two-day meeting. Transcripts of the conference were prepared and distributed to attendees and to others on request. Evaluations submitted by those in attendance indicated satisfaction was high and that an interest in holding an annual conference existed.

Starting Date: June 1983 **Completion Date:** August 1983

6.2.6/ Teleconferencing Training Program (33370)

Project Objective

To develop a comprehensive package to train users of teleconferencing systems.

Progress

The Teleconferencing Training Guide was printed and an A/V show, "Training for Success," was developed and produced. More than 400 guides have been distributed and numerous requests have been received for the A/V show.

In FY 84/85, the TEMP Teleconferencing Training Program is expected to be widely distributed.

Starting Date: April 1983 **Completion Date:** March 1984

6.2.7/ Case Studies (33373)

Project Objectives

- To assess the level of use, perception of benefits, and future plans of more than 20 large companies using teleconferencing; and
- to encourage other organizations to use teleconferencing.

Progress

In-depth interviews were conducted with more than 20 large companies currently using teleconferencing to assess the level of use, the benefits, and the future of teleconferencing.

Starting Date: April 1983 **Completion Date:** March 1984

7/ ALTERNATIVE TRANSPORTATION FUELS: SUBSTITUTION MARKETING

7.1/ Overview

A significant increase in the use of propane as a vehicle fuel occurred in FY 83/84. The propane-powered vehicle population in Ontario has been estimated at 50 000 vehicles. Also, the number of propane fuelling stations has steadily increased to more than 1000 retail facilities in the province.

The second propane seminar, for fleet managers, held in January of 1984, proved to be a success because of the co-operation and assistance of DriveSave and the Propane Gas Association of Canada.

Drive Propane staff became involved in the development of the new Propane-Powered Vehicle Inspection Program which will improve the safety of propane vehicles.

7.2/ Project Reports

7.2.1/ Drive Propane (33124)

Project Objective
To promote the use of propane as a motor fuel.

Progress
A significant growth in the size of the propane-powered vehicle fleet in FY 83/84 increased the number of propaned-powered vehicles in Ontario to more than 50 000. Savings in gasoline totaled more than 150 million litres.

The second propane seminar was attended by fleet managers representing more than 150 companies. The seminar and the trade show propane exhibits generated high interest in propane.

The number of propane refuelling stations in Ontario continued to grow, including the establishment of outlets by the major petroleum companies.

Participation in the development of the MTC Propane-Powered Vehicle Inspection Program, a major activity of the Drive Propane staff, led to the planned implementation of the program in the summer of 1984.

Starting Date: April 1980 **Completion Date:** Ongoing

7.2.2/ Drive Propane Newsletter (33385)

The Drive Propane newsletter has been amalgamated with the DriveSave and Trucksave newsletters to form the new FuelSaver newsletter. Refer to DriveSave's project report 1.5.3 for further information.

8/ ALTERNATIVE TRANSPORTATION FUELS

8.1/ Overview

Activities in the TEMP ATF section may be characterized by three classifications:

- Research and Assessment;
- Demonstration and Testing; and
- Technology Development.

In all undertakings in the above three categories, TEMP promotes and seeks the participation of private sector partners. These partners may be equipment or vehicle manufacturers, fuel suppliers, universities or other research institutes. In addition to furthering the state-of-the-art of alternative fuel utilization, the ATF sector strives to increase overall public awareness of alternative fuels for transportation and to capitalize on new industrialization opportunities in the development of alternative fuels.

In the initial phases of the ATF activities, a majority of projects were undertaken in the Research and Assessment category, and were usually carried out by MTC staff in conjunction with a consultant. As knowledge of alternative fuels and utilization technologies increased, equipment testing and utilization demonstrations of available fuels were initiated. During the past year, Technology Development projects have been initiated and there has been an increased emphasis on private sector participation. At the same time, research projects are moving away from general fuel assessments and are beginning to address specific technological problems, such as the efficient on-board storage of natural gas. Testing projects are also being reduced and demonstrations have been expanded to include most of the usable fuels.

In particular, the dynamometer testing of propane conversion equipment has been concluded while demonstrations have been expanded to include CNG, methanol blends, neat methanol fuels, and propane in a transit application. Technology development has been initiated in the development of a propane conversion of a heavy duty diesel engine, and assessment of methods for developing methanol-fuelled diesel engines is

being carried out. Private sector participation has been obtained in most of the projects undertaken in the past year.

8.2/ Project Reports

8.2.1/ ATF: General

8.2.1.1/ Alternative Fuels Program Publicity (33293)

Project Objective

To inform government and the public of the uses and properties of alternative fuels, and of the TEMP incentives in alternative transportation fuels development.

Progress

A consultant has been hired and draft copies of the six booklets on Alcohol Fuels, Natural Gas, Propane, Hydrogen and Electricity have been prepared and reviewed. An overview booklet and additional presentation have also been prepared.

In the next quarter, it is anticipated that the booklets will be finished to 'camera-ready' status and that final approvals will be obtained for printing.

Starting Date: July 1982 **Completion Date:** December 1984

8.2.2/ ATF: Natural Gas

8.2.2.1/ Demonstration of CNG Use in Private Sector Fleets I (Consumers' Gas) (33229)

Project Objective

To demonstrate the technology and economics of operating CNG-powered fleet vehicles and to assess the market applicability of such vehicles.

Progress

The contractual phase of the CNG demonstration in Consumers' Gas vehicles was completed. Three interim reports and a final report were submitted

by Consumers' Gas. These included hardware specifications of converted vehicles and the fuelling facility. The reports also documented the fuel consumption, performance and reliability of 22 CNG test vehicles and 19 gasoline control vehicles during the period October, 1 1981 to September 20, 1982.

MTC staff closely monitored the progress of the demonstration. Consumers' Gas data were independently analysed and commented upon and a representative set of the demonstration vehicles was tested under laboratory conditions.

MTC's assessment of the entire demonstration data was summarized in a separate report now being produced.

Starting Date: January 1982 **Completion Date:** March 1984

8.2.2.2/ Testing and Evaluation of Automotive CNG Conversion Equipment (PH I) (33235)

Project Objective

To assess and optimize fuel consumption, performance, exhaust emissions and other operating characteristics of a common light duty spark-ignition engine converted to run on natural gas by using three representative conversion kits.

Progress

The test program has been completed, and a number of conclusions reached which should assist in 'second-generation' carburetor design. There was an increase in fuel consumption and a drop in performance with all three kits under test, although one kit was markedly better than the others.

It was determined that optimization of air/fuel ratios, and ignition timing curves permitted significant efficiency improvements. All of the kits were found to be much less capable of providing an optimized air/fuel mixture throughout the engine operating envelop than are comparable gasoline carburetors. A report is in production.

Starting Date: November 1982 **Completion Date:** February 1984

8.2.2.3/ Evaluation of CNG Conversion Kits on Vehicles (33291)

Project Objective

To assess the performance of compressed natural gas (CNG) in commercially available conversion kits and light duty vehicles. To investigate and demonstrate improvements in present practices.

Progress

An MTC pick-up truck (Ford F-150) was converted to run on natural gas using Alternative Fuel Systems and CNG Fuel Systems conversion equipment. The vehicle was tested on the MTC chassis dynamometer using natural gas and gasoline. Fuel consumption, performance, and exhaust emissions were measured with both makes of conversion equipment. In addition, the effects of adjusting the carburetor, the ignition system and the exhaust emissions equipment were assessed.

In the next quarter, the project report will be prepared.

Starting Date: January 1982 **Completion Date:** July 1984

8.2.2.4/ Demonstration of CNG Use in Private Sector Fleets II (Union Gas) (33337)

Project Objective

To investigate the practicality of using CNG as a fuel in normal fleet operations.

Progress

A compressor and cascade tank has been installed at a Union Gas Company facility in Hamilton, and 25 Union Gas vehicles have been converted to natural gas fuel. A natural gas dispensing pump and totalizer have been constructed, with sufficient capacity to serve a number of outside fleet vehicles. Data have been accumulated on these vehicles since the beginning of the test.

In the next year, a final report will be issued.

Starting Date: June 1982 **Completion Date:** July 1984

8.2.2.5/ Development of Adsorption Media for Storing CNG (33353)

Project Objective

To develop and characterize adsorption material for CNG with improved mechanical and adsorption properties.

Progress

This project, carried out at the Royal Military College at Kingston, is the second stage of a program to develop a method of storing CNG in adsorbents at moderate pressures instead of in free space containers at high pressure. A high absorbency material was compounded with poly vinylidene fluoride and poly vinylidene chloride polymers and monomers and the resulting blends were tested for surface area, porosity, absorption characteristics and mechanical stability.

This project has been completed, and a report prepared. The stage has been set for a scaled-up test of some of these materials, in preparation for a vehicle test.

Starting Date: June 1983 **Completion Date:** March 1984

8.2.2.6/ CNG Multi-Cell Tank Development(33391)

Project Objective

To design a CNG multi-cell fuel tank;

- to review the certification requirements to satisfy DOT/CTC criteria;
- to evaluate manufacturing techniques for such designs; and
- to assess (at least on a preliminary basis) the market potential for such tanks.

Progress

A consulting firm carried out the work required to satisfy the objectives of this project. The work has been completed and is documented in a Report #1336/1295 "Multi-Cell CNG Fuel Tank Design," March 30, 1984.

The report reviews certification requirements for Ontario, for Canada, and for the USA. It proposes a tank, discusses the material to be used, defines operating conditions and calculates stresses using finite element techniques. Both operational and emergency conditions, as well as long-term effects are considered. Engineering drawings of the final design, as well as finite element models and results, are included. Manufacturing techniques and cost for production tanks have been estimated and a preliminary look at marketing considerations is presented.

The report concludes on an optimistic note and recommends proceeding to a Stage II, wherein prototype tanks will be built and used for testing and certification.

Starting Date: October 1983 **Completion Date:** April 1984

8.2.2.7/ CNG/Propane-Powered Vehicle Development (PH I) (33392)

Project Objective

To extend the range of CNG-powered vehicles through the use of propane as back-up fuel.

Progress

A control system for a gaseous fuel carburetor has been developed that enables a spark-ignited engine to operate on propane, natural gas, or any mixture of these two gases. The system operates with an exhaust oxygen sensor that electronically controls the fuel flow rate and the air/fuel ratio produced in the carburetor.

A dual tank fuel storage with a refuelling system has been developed for the storage of both propane and CNG on-board a vehicle.

The carburetion system has been tested on a dynamometer-mounted engine. The operation of the fuel tank system has also been laboratory tested.

Starting Date: June 1982 **Completion Date:** July 1984

8.2.3/ ATF: Propane

8.2.3.1/ Diesel/Propane Conversion of Heavy Duty Trucks, (PH 1) ORF (33335)

Project Objective

To define and prepare for a propane engine development program by meeting with prospective engine manufacturers, selecting an engine, and formulating a plan of action. A test cell and computer-controlled dynamometer will also be installed.

Progress

Phase I of the project is complete. The dynamometer facility at ORF is fully operational and commitments from Imperial Oil, Cummins Gas Engines and Oxin Carburation have been obtained. An engine optimization plan has been formulated for Phase II. Phase II will involve the optimization of an existing Cummins Propane Engine (currently used only in stationary applications) for Class 8 transport service.

Starting Date: January 1983 **Completion Date:** September 1984

8.2.3.2/ Testing and Evaluation of Conversion Equipment (Propane) (33295)

Project Objective

To test four representative propane conversion equipments on a large truck engine. (370 CID)

Progress

Four propane conversion systems, representative of available technology, were tested on the large 370 CID truck engine at the University of Toronto's Mechanical Engineering Department Laboratory. The conclusions are that power output is down a few percent compared with gasoline, while energy efficiency is generally improved -- up to 20% for the best cases and averaging around 10%, depending on speed and load. The report was approved as a TEMP report and distributed. An SAE paper is in preparation based on the whole series of propane engine tests.

Starting Date: March 1982 **Completion Date:** May 1983

8.2.3.3/ Diesel/Propane Conversion of Heavy Duty Trucks (PH II) ORF (33347)

Project Objective
To implement the program defined in Phase I, involving the conversion, dyno testing and road testing of a class 8 engine.

Progress
Characterization of a class 8 driving cycle has been completed. Dynamometer "drive simulations" have been performed on a Cummins diesel engine. The propane engine has been received by ORF from Cummins Gas Engines and is currently being installed on the dynamometer. The optimization procedure will begin after the installation and will be followed by in-vehicle road testing.

Starting Date: October 1983 **Completion Date:** July 1984

8.2.3.4/ Assessment of Propane/Butane Mixtures (LPG) as Automobile Fuel (33346)

Project Objective
To assess the feasibility of using propane/butane mixtures as alternative fuel for Ontario's transportation.

Progress
After initial project definition, the start of the project was deferred due to reallocation of funds.

Starting Date: Deferred **Completion Date:** Deferred

8.2.3.5/ Assessment of Propane Conversion Equipment (33349)

Project Objective
To assess three conversion kits under actual field conditions using an MTC vehicle.

Progress
After initial project definition, the project was postponed due to a reassignment of priorities and a reallocation of funds.

Starting Date: Postponed **Completion Date:** N/A

8.2.4/ ATF: Hydrogen

8.2.4.1/ I.C. Engine Performance on H_2/CO (PHI) (33332)

Project Objective
To determine the combustion characteristics of gaseous fuel mixtures of two parts H_2 and one part CO, as obtained by disassociating methanol.

Progress
In this project, a single cylinder test engine (CFR engine) was fitted to operate on H_2/CO mixtures and measurements were taken of brake power output, energy consumption, engine emissions and temperature, as functions of equivalence ratio, spark timing and compression ratio.

The results showed that although the H_2/CO mixtures produced more efficient operation than gasoline, H_2/CO mixtures were not, in most cases, more efficient than liquid methanol.

Therefore, research with H_2/CO mixture was discontinued until further developments define new areas of investigation.

A final report documenting the results was submitted.

Starting Date: July 1982 **Completion Date:** June 1983

8.2.4.2/ Hydrogen Engine Testing and Development (PH II) (33364)

Project Objective
To investigate the properties of power control of hydrogen engines by quality governing.

Progress

After the completion of the hydrogen fuel storage and delivery system at the U of T Engine Testing Laboratory, the project was extended, under the existing project number, to include investigation of power control by quality governing of hydrogen engines.

Within these investigations, the minimum and maximum fuel/air ratios usable at various loads and engine speeds have been determined and Mean Best Torque (MBT) timing has been measured for various equivalence ratios at different speeds and loads.

In the next fiscal year, the functional relationship between MBT timing and equivalence ratio at various speeds and loads will be determined.

Starting Date: July 1983 **Completion Date:** June 1984

8.2.5/ ATF: **Methanol**

8.2.5.1/ Methanol Blend Road Test with Government Vehicles (33233)

Project Objective

To evaluate the feasibility of a methanol-gasoline blend in practical fleet use.

Progress

The fleet testing program has been completed. Information, with regard to engine wear, fuel consumption, driveability, and service costs, has been tabulated from the inception of the project. Three CVS tests have been performed on each of nine vehicles with high blend consumption. Approximately 140 000 L of fuel blend have been used under test conditions. Three major program review meetings have been held, and interim reports issued for each meeting. The data has been analysed and presented to interested groups.

A final report is in preparation and will be issued shortly.

Starting Date: January 1982 **Completion Date:** August 1985

8.2.5.2/ Straight Methanol Fuel and Vehicle Evaluation -- Ford/Shell (33231)

Project Objective

To evaluate methanol fuel formulations containing hydrocarbon additives for cold-starting driveability, fuel consumption and emissions performance on three Ford Escort methanol vehicles.

Progress

Twenty-seven different formulations were eventually examined and four were selected as suitable with respect to startability and driveability. Phase II of the project, a fleet demonstration involving 16 vehicles, has been initiated. A report on the first part was approved and a TEMP report is being issued.

Starting Date: March 1983 **Completion Date:** September 1983

8.2.5.3/ Evaluation of Methanol for Diesels (33336)

Project Objective

To review and assess existing technology of using neat methanol for diesel engines and to outline a strategy for the most suitable methanol/diesel conversion technology.

Progress

A contract was signed with INCO Ltd. to conduct a literature search and technology review of methanol use in diesel engines.

The review has been completed and a report issued.

Starting Date: February 1983 **Completion Date:** December 1983

8.2.5.4/ Methanol Blends Carburation: Cold-Start Performance (33360)

Project Objective

To examine and model the vaporization taking place during the carburation of methanol blends under cold-starting conditions.

Progress

Using an existing two cylinder engine, the project measured the minimum temperatures and air/fuel ratios required for starting. A computer model of the starting process was developed to gain understanding of the important engine design factors which control startability. The project has led to a scaled-up investigation using a full-size methanol engine to further investigate the low temperature limits. A TEMP report is being issued.

Starting Date: March 1983 **Completion Date:** September 1983

8.2.5.5/ Ford/Shell Straight Methanol Vehicle Demonstration Program (PH II) (33358)

Project Objective

To assess acceptability under operational service conditions of a fleet of 16 factory-supplied methanol vehicles with respect to performance, component durability and engine wear.

Progress

Following from Phase I in which fuel formulations were developed for starting at low temperatures, vehicles have been placed in fleet use. Oil samples have been continually analysed to determine wear rates for two duty cycles -- high mileage and low mileage. Running adjustment changes have been made to spark plugs and choke settings to improve performance. One review meeting was held in January and the next is planned for July 1984.

Starting Date: November 1983 **Completion Date:** December 1984

8.2.5.6/ Straight Methanol Carburation: Cold-Start Performance (33361)

Project Objective

To acquire and install a state-of-the-art methanol automobile engine in a cold test enclosure and to examine cold starting and warm-up phenomena with methanol fuel.

Progress

A full size methanol engine (4 cylinder Ford Escort) was obtained for installation into a refrigerated enclosure.

Starting Date: February 1984 **Completion Date:** September 1984

8.2.5.7/ MTC Straight Methanol Vehicle Demonstration (33362)

Project Objective

To evaluate methanol fuel formulations based on oxygenated volatility improvers for cold-starting ability in two makes of methanol vehicles.

Progress

Two new Ford Escort methanol vehicles were acquired and added to a VW Methanol Golf already available. One Escort and the Golf have been instrumented to examine behaviour during starting at low temperatures. Co-operation has been elicited from Celanese Canada which has supplied special formulations containing di-methyl ether and di-methoxy methane (methylal) to raise volatility. Cold-starting tests in a refrigerated trailer are in progress. The other Escort is on mileage accumulation duty to assess wear.

Starting Date: May 1984 **Completion Date:** December 1984

8.2.6/ ATF: OC Transpo

8.2.6.1/ OC Transpo Propane Bus Demonstration (Dedicated) (33344)

Project Objective

To demonstrate the practicality of operating a transit fleet of propane-powered buses. To obtain information on reliability, operating costs and public acceptance.

Progress

The first bus was converted to propane in December 1983. Some initial set-up problems were experienced but the problems have subsequently been solved. Fuel economy tests comparing propane and diesel buses were undertaken. Results from the tests indicated that the propane bus met the GO/NO GO criteria specified in the contract. Thus, the program will be continued.

Work planned for FY 84/85 will include expansion of the propane fleet to 15 buses, performance of noise and vibration tests, modification of maintenance buildings for propane vehicles and the undertaking of a study of the propane fuelling facility.

Starting Date: March 1983 **Completion Date:** January 1987

9/ DATA ANALYSIS AND PROGRAM PLANNING

9.1/ Overview

In conducting the TEMP program, there has always been a need for transportation energy data. To avoid duplication of search and to ensure the office has the most recent statistical information available, Data Analysis and Program Planning module was initiated.

In the past year, the second "Transportation Energy Data Report" and the first annual "Long-Range Plan" were completed and distributed to their respective audiences. An energy survey was undertaken to assess Ontario driver's reactions toward fuel conservation and TEMP's activities. The compilation of data for the third edition of the "Transportation Energy Data Report" was completed and this edition will contain even more detail than the second. The preparation of the second TEMP "Long-Range Plan" will incorporate forecast changes brought about by changes occurring in the past fiscal year. A "Positions & Prospects" report, detailing TEMP's positions, prospects, issues, strategies, and resource implications, was also completed and distributed throughout the Ministry.

9.2/ Project Reports

9.2.1/ Transportation Energy Data Report: Volume II (33277)

Project Objective

To monitor the current transportation energy situation and identify trends and relationships regarding transportation energy demand.

Progress

Volume II of the "Transportation Energy Data Report" was completed and distributed to federal government, MTC and Ministry of Energy staff, to consultants and libraries. Since the expansion of the report, the general response from users has been favourable.

Starting Date: April 1982 **Completion Date:** May 1983

9.2.2/ Transportation Energy Data Report: Volume III (33277)

Project Objective

To monitor the current transportation energy situation and identify trends and relationships regarding transportation energy demand.

Progress

Volume III of the Transportation Energy Data Report has expanded to include more data than Volume II, thus, it will be of greater importance to statisticians and consultants who use this document. The final draft of the report is being refined and printing of the report is expected in the near future. Release of the document is scheduled for July 1984.

Starting Date: April 1983 **Completion Date:** July 1984

9.2.3/ Transportation Energy Conservation Survey (33279)

Project Objectives

- To provide information detailing Ontario drivers' perception of, and attitudes and behaviour towards, fuel conservation and alternative transportation fuels; and
- to evaluate Ontario drivers' awareness of TEMP activities.

Progress

A survey of 1000 Ontario drivers has been completed and the results correlated.

Starting Date: April 1983 **Completion Date:** July 1984

9.2.4/ TEMP Positions & Prospects 1984 (33326)

Project Objective

To produce a report detailing the current positions, prospects, issues, strategic and resource implications associated with each TEMP subprogram.

Progress

The document was completed and distributed throughout MTC and M'ENY.

Starting Date: September 1983 **Completion Date:** December 1983

9.2.5/ TEMP Long-Range Plan -- 82/83 to 87/88 (33327)

Project Objectives

- To provide a document to guide program direction within TEMP and its subprograms; and
- to outline for MTC senior management TEMP's financial and human resource requirements for the next five years.

Progress

The first LRP developed by TEMP was completed and distributed within MTC and the Ministry of Energy.

Starting Date: January 1982 **Completion Date:** June 1983

9.2.6/ TEMP Long-Range Plan -- 84/85 to 88/89 (33327)

Project Objectives

- To provide a document to guide program direction within TEMP and its subprograms; and
- to outline for MTC senior management TEMP's financial and human resource requirements for the next five years.

Progress

Initial preparation and review of the original TEMP Long-Range Plan has begun. The 84/85 to 88/89 LRP will build on the original LRP. The new LRP will update the forecasts for financial and human resource requirements consequent to changes which occurred during the past fiscal year.

Starting Date: February 1984 **Completion Date:** July 1984

10/ TEMP ALLOCATIONS AND EXPENDITURES -- Fiscal Year 1983/84

10.1/ Introduction

The following pages summarize the funding allocations and expenditures for the Transportation Energy Management Program for FY 1983/84. The majority of the funding is that portion allocated by the Ministry of Energy for direct operating expenditures, including consultant and university services, purchase of goods and equipment, and the direction of seminars. The Ministry of Transportation and Communications' expenditure includes staff resources, data processing, travel and administrative costs.

Tables 1 to 3 provide a general overview, while Tables 4 to 18 detail allocations and expenditures by project. The data featured in these pages have not been audited, but are considered to be accurate.

Table 1/ TEMP FY 83/84 Budget

Project Title	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office[1] Final Expend.
Conservation	1112.0	971.4	1024.0	197.1
ATF	684.0	722.5	732.8	58.9
OC Transpo	360.0	360.0	312.6	3.0
Non Project-Related Costs (Administration, non-working time overhead, conferences, data processing etc.)	0	0	0	233.2
TOTAL	2156.0	2053.9	2069.4	492.2

[1] This column does not include MTC expenditure by offices other than TEMP, even in cases where these offices incurred costs working on TEMP projects.

[2] M'ENY's allocation was reduced as a result of overall government budgetary constraint requested by Management Board.

Table 2/ Conservation

Program	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
Municipal	289.5	185.6	197.9	65.0
Share-A-Ride	142.0	126.0	130.1	39.0
DriveSave	282.0	275.1	294.6	30.4
Government Programs	20.0	0	0	6.0
Trucksave	175.5	215.4	231.8	32.2
Teleconferencing	115.0	102.5	104.5	0
Data Analysis	20.0	19.7	17.7	11.7
ATF Marketing	53.0	39.7	39.9	12.8
Intercity	15.0	7.4	7.4	0
TOTAL	1112.0	971.4	1024.0	197.1

Table 3/ Alternative Transportation Fuels

Project Title	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
General	41.0	33.0	41.9	4.9
Hydrogen	75.0	77.1	56.8	3.5
Propane	218.6	238.7	238.9	9.3
Natural Gas	166.0	151.0	173.9	14.9
Methanol	183.4	222.7	221.2	23.3
OC Transpo Propane Buses	360.0	360.0	312.6	3.0
TOTAL	1044.0	1082.5	1045.3	58.9

Table 4/ DRIVESAVE

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33189	DriveSave: Fleet Program	120.5	102.6	109.0	8.4
33206	FuelSaver News	41.0	31.1	34.9	5.8
33207	General Licensed Drivers Program	108.5	124.0	130.4	10.0
33195	DriveSave: Driver Education	12.0	17.4	20.3	6.2
TOTALS		282.0	275.1	294.6	30.4

Table 5/ TRUCKSAVE

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33106	Trucksave Fleet Advisory Committee	15.0	21.0	19.8	5.8
33384	Trucksave Newsletter	3.0	0	0	3.0
33200	Fuel Efficient Truck Maintenance	45.0	45.0	45.0	3.0
33202	Fuel Efficient Spec'ing Manuals	50.0	45.5	45.6	3.0
33299	1983 Fuel Economy Challenge	30.0	37.9	37.2	11.4
33140	Small Fleet and Owner Operating Initiatives	12.5	36.0	54.4	3.0
33371	Truck Marketing Assessment	20.0	30.0	30.0	3.0
TOTALS		175.5	215.4	232.0	32.2

Table 6/ MUNICIPAL

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33174	Metro Toronto Transp. Energy Study (PH II)	37 000	37.0	36.8	13.0
33177	Municipal Transp. Energy Advisory Committee	33 000	27.1	38.5	33.0
33225	TEAM Distribution	12 000	9.0	12.0	0
33339	MTEAC Newsletter	12 500	12.5	12.5	10.0
33341	Ottawa-Carleton Transp. Energy Management Study	60 000	60.0	60.0	2.0
33319	Fleet Management Information System	75 000	20.0	15.2	5.0
33342	Transp. Energy Factors in Land Use Planning	40 000	0	0	0.0
33340	Marketing the Municipal Driver Training Program	20 000	20.0	22.9	2.0
TOTALS		289 500	185.6	197.9	65.0

Table 7/ SHARE-A-RIDE

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33118	Marketing of Employer-Sponsored Ridesharing	58 000	58.0	59.3	24.0
33338	Share-A-Ride Newsletter	31 000	31.0	33.0	3.0
33298	Government Employee Carpooling	3 000	3.0	4.1	3.0
33387	Development of an Area-Wide Computer Matching Program	50 000	34.0	33.6	9.0
TOTALS		142 000	126.0	130.0	39.0

Table 8/ Government Programs

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33147	Government Fleetsave	20.0	0	0	6.0
TOTALS		20.0	0	0	6.0

Table 9/ TELECONFERENCING

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33304	Private Sector Teleconferencing Publicity Program	50 000	50.0	51.2	0
33370	Teleconferencing Training Program	25 000	22.1	28.7	0
33306	Equipment Demo Testing	20 000	7.6	4.6	0
33305	Ontario Government Training	5 000	5.0	3.3	0
33373	Case Studies	5 000	5.0	4.8	0
33329	Substitution/ Complementarity Workplan	6 930	7.9	7.5	0
33369	Conference on Teleconferencing	3 070	4.9	4.4	0
TOTALS		115 000	102.5	104.5	0

Table 10/ ATF: SUBSTITUTION MARKETING

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33124	Drive Propane	42.0	36.2	36.3	9.9
33228	Evaluation of Propane Conversion Systems on Vehicles	8.0	0	0	0
33385	Drive Propane Newsletter	3.0	3.5	3.5	2.9
TOTALS		53.0	39.7	39.8	12.8

Table 11/ INTERCITY

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33386	Intercity	15.0	7.4	7.4	0
TOTALS		15.0	7.4	7.4	0

Table 12/ ATF: GENERAL

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33293	Alternative Fuels Program Publicity	41.0	33.0	42.0	4.9
TOTALS		41.0	33.0	42.0	4.9

Table 13/ ATF: NATURAL GAS

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'EMY Final Expend.	TEMP Office Final Expend.
33229	Demo. of CNG Use in Private Sector Fleets (Consumer Gas)	0	0	0	4.7
33235	Testing & Evaluation of Automotive CNG Conversion Equipment (PH 1)	39.0	39.0	39.4	1.0
33291	Evaluation of CNG Conversion Kits on Vehicles	5.0	2.5	1.5	0.8
33337	Demo. of CNG Use In Private Sector Fleets II (Union Gas)	67.0	47.5	52.5	6.0
33353	Development of Adsorption Media for Storing CNG	34.0	29.0	27.1	1.3
33391	CNG Multi-Cell Tank Development	0	12.0	33.9	1.1
33392	CNG/Propane-Powered Vehicle Development (PH I)	21.0	21.0	19.5	0
TOTALS		166.0	152.0	173.9	14.9

Table 14/ ATF: PROPANE

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33335	Diesel/Propane Conversion of Heavy Duty Trucks (PH I) ORF	115.0	118.8	119.0	4.3
33295	Testing & Eval. of Conversion Equipment (Propane)	7.6	8.1	8.1	0
33392	Develop. of CNG/ Propane Engine Configuration	1.8	1.8	1.8	1.0
33347	Diesel/Propane Conversion of Heavy Duty Trucks (PH II) ORF	82.2	110.0	110.0	2.6
33346	Assessment of Propane/ Butane Mixtures (LPG) as Auto Fuel	10.0	0	0	0.8
33349	Assessment of Propane Conversion Equipment	2.0	0	0	0.6
TOTALS		218.6	238.7	238.9	9.3

Table 15/ ATF: HYDROGEN

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33332	I.C. Engine Performance on H_2/CO PH I	5.0	7.1	7.1	0.5
33364	Hydrogen Engine Testing & Development (PH II)	70.0	70.0	49.7	3.0
TOTALS		75.0	77.1	56.8	3.5

Table 16/ ATF: METHANOL

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33233	Methanol Blend Road Test with Gov't Vehicles	16.7	36.7	41.8	7.5
33231	Straight Methanol Fuel & Vehicle Evaluation (F/S)	25.0	25.0	22.5	4.1
33336	Evaluation of Methanol for Diesels	25.0	25.0	22.8	2.1
33360	Methanol Blends Carburation: Cold-Start Perform.	10.0	10.0	10.0	1.7
33358	Straight Methanol Vehicle Demo. (F/S)	86.7	86.7	85.3	3.6
33361	Straight Methanol Carburation: Cold Start Perform.	20.0	10.0	9.5	1.7
33362	MTC Straight Methanol Vehicle Demo.	0	29.3	29.3	2.6
TOTALS		183.4	222.7	221.2	23.3

Table 17/ ATF: OC TRANSPO

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33344	OC Transpo Propane Bus Demo. (Dedicated)	360.0	360.0	312.6	3.0
TOTALS		360.0	360.0	312.6	3.0

Table 18/ DATA ANALYSIS

Project Number	Project Name	M'ENY Alloc. Init.	M'ENY Alloc. Final	M'ENY Final Expend.	TEMP Office Final Expend.
33326	TEMP Positions & Prospects 1984	1.5	1.0	0	3.3
33327	TEMP Long-Range Plan for 1984/89	1.5	1.0	0.4	3.3
33279	Transportation Energy Conservation Survey	15.0	15.7	15.7	3.0
33277	Transportation Energy Data Report (Volume III)	2.0	2.0	1.6	2.1
TOTALS		20.0	19.7	17.7	11.7

APPENDICES

APPENDIX A

ADVISORY COMMITTEES

DRIVESAVE FLEET ADVISORY COMMITTEE

Name	Company
Don Beange (Chairman)	MTC
Carl Wiese (Executive Secretary)	MTC
Frank A. Hard	Xerox Canada
Ken Austin	G.D. Searle
Bill Brooks	Sears
Joe Coby	Bell Canada
Howard Ferguson	Canada Packers
Chris Hill	General Foods
Jack Patriache	Ministry of Energy
Don Ryrie	Bell Canada
Harvey Siegel	Ontario Hydro
Ray Strawson	Thunder Bay, City of
Ted Westaway	Work Wear Corp.
Bob Weylie	Lend Lease

TRUCKSAVE ADVISORY COMMITTEE

Name	Company
D.E. Ker (Chairman)	Trucksave, MTC
D.H. Andrew	Alltrans Canada Ltd.
G.G. Carr	Tippet-Richardson Ltd.
A.E. Coney	C.P. Express Ltd.
S. Donovan	George Brown College
W.H. Gough	Kingsway Transport Ltd.
G. Dennis	Simpson-Sears Ltd.
V.H. Wintjes	Canadian Tire Corp. Ltd.
A.J. Lake	City Engineer's Dept. London
F.T. Leslie	Canada Cartage System Ltd.
H. Ruhl	H. Ruhl Machinery Co. Ltd.
S.O. Williamson	Shell Canada Ltd.
D. Wronski	Ontario Trucking Assoc.
T. Brown	Parkway Transport
G. Hogg	J.P. Drapeau Transport

In conjunction with:
Canadian Fleet Maintenance Seminar
Private Motor Truck Council
Ontario Private Truck Association
Automotive Transportation Service Superintendents Association

TRUCKSAVE ECONOMY CHALLENGE SUB-COMMITTEE

Name	Company
D.E. Ker (Chairman)	Trucksave, MTC
S. Bigus	Labatt's Breweries
Wm. H. Capes	International Carriers Ltd.
Wm. R. Clarke	Avis Leasing
J.D. Gruno	Imperial Oil Ltd.
R.J. Haystead	Kingsway Transport
C. Hoonaard	Glengarry Transport
D. Murphy	Kingsway Transport (Training)
H.J. Weishar	Molson's Brewery

MUNICIPAL TRANSPORTATION ENERGY ADVISORY COMMITTEE

Mr J.R. (Jack) McCorkell
Director of Operations
Regional Municipality of Durham

Mr E.R. (Ted) Simonen
Roadway Division Engineer
Regional Municipality of Niagara

Mr L. (Louis) Shallal (Chairman)
Chief Systems Planning Engineer
Transportation Planning Division
Regional Municipality of Ottawa-Carleton

Mr D. HG. G. (Doug) Thwaites
Director of Transportation Planning
Regional Municipality of Peel

Mr Mike Stanojevic
Roads and Traffic Department
Municipality of Metropolitan Toronto

Mr G. A. (Gerry) Thompson
Director of Roads & Traffic
Regional Municipality of Waterloo

Mr J. (John) Ireland
Director of Transportation Services Branch
Regional Municipality of York

Mr D.C. (Don) Redmond
City Engineer
City of Sault Ste. Marie

Mr T. (Tom) Fell
Director of Engineering & Operations
City of Thunder Bay

Ms M. George
Policy Analyst
Toronto Transit Commission

Mr G.A. (George) Olah
Co-ordinator, Transportation Energy
Ministry of Energy

Mr T.G. (Terry) Robbins, (Vice-Chairman)
TEMP
Ministry of Transportation and Communications

Mr J.H. (Hugh) Blaine, Head
Maintenance Management Section
Ministry of Transportation and Communications

Mr D. (Dale) Juneja
Transit Office
Ministry of Transportation and Communications

Mr J. (John) Childs
Municipal Roads Office
Ministry of Transportation and Communications

Mr R.A. (Bob) Ballantine
Policy Planning Branch
Ministry of Transportation and Communications

Mr F.M. (Frank) Cherutti (Executive Secretary)
TEMP
Ministry of Transportation and Communications

APPENDIX B

ALTERNATIVE TRANSPORTATION FUELS GOVERNMENT/PRIVATE SECTOR LIASONS

The following institutions, agencies and companies are in contact with, and exchanging information with, TEMP Alternative Transportation Fuels.

University of Toronto
Royal Military College
UTDC R & D Ltd.
Ontario Research Foundation
Ontario Hydro
Consumers' Gas Co.
Union Gas Ltd.
Northern and Central Gas Corp. Ltd.
Motor Vehicle Manufacturers' Association
Chrysler Canada Ltd.
General Motors of Canada Ltd.
Ford Canada Ltd.
Gulf Canada Ltd.
Imperial Oil Ltd.
Shell Canada Ltd.
Sunoco Inc.
Alberta Gas Chemicals Ltd.
Celanese Canada Inc.
Canadian Methanol Canadien
INCO Ltd.
Oxin Carburetion Inc.
OC Transpo
Interautomation Ltd.
DSMA International Inc.
CNG Fuel Systems Ltd.
Research Institute for Road Vehicles TNO (The Nehterlands
Daimler-Benz AG (W. Germany)
Adolph Saurer Ltd. (Switzerland).